

Notice of Allowability

Application No.

10/804,484

Applicant(s)

ROTHMAN ET AL.

Examiner

Art Unit

Esaw T. Abraham

2112

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amdt filed on 04/12/07.
2. ☒ The allowed claim(s) is/are 1, 3-8, 10, 12-15, 19-25 and 27-31 (renumbered as 1-24).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 04/26/07.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.



GUY LAMARRE
PRIMARY EXAMINER

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and or additions be acceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Corey Claassen on 04/26/07.

2. The application has been amended as follows:

- a) In the specification page 21 line 20, remove the phrase "(ie., stores and or/ transmits)"
- b) In the specification page 22 lines 3-5, remove the sentence "In addition, a machine-accessible medium can include propagated signals such as electrical, optical, acoustical or other form of propagated signals (e.g., carrier waves, infrared signals, digital signals, etc.).".
- c) Claim 13, line 1, insert ---"including a tangible machine accessible medium---" after "An article of manufacture".
- d) Claim 13, line 3, replace "on the computer" to ---on a computer---

Examiner's statement for reason for allowance

3. Claims 1, 3-8, 10, 12-15, 19-25 and 27-31 have been allowed.

The following is an examiner's statement for allowance:

As per claim 1:

The prior art of record teach, Barnstijn et al. (hereinafter "Barnstijn ") teaches or discloses a system and a method associated with the fields of application debugging or

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program debugging. (see col. 1, lines 10-15). Barnstijn teach a host system (a first computer) is connected to the target system or remote system (second system) via a communications link. A program is loaded onto the host computer that translates operating system calls into a number of communication signals that are transmitted over this then loaded onto the target system. The target operating system in turn sends an operating system signal to a debugging application in the target system. The debugging application in the target system then sends an operating system signal to the operating system. The operating system translates the operating system signal to an event signal and sends the event signal (debug event or command) over the communications link and the host system receives the event signal from the communications link and processes the event signal using a communication program resident on the host system, thereby translating the event signal into a host system operating system signal (the first computer system communicatively coupled to the second communication system). This operating system signal is transferred to the application under development in the host system. In this manner both input and output events are physically executed or initiated using the target system's hardware while one or more applications under development reside and are executed in the host computer development environment (see col. 2, lines 46-67 and col. 3, lines 1-28).

The prior of art, Lee in an analogous art teaches controlling a data processing system after startup, but before control is passed to the main operating system and in particular to use of an Open Firmware user interface as a debugging tool (see col. 1, lines 7-10). Further, Lee teaches that the combination of pre-loaded software into ROM

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is termed "firmware". Boot firmware controls the computer from startup until control is handed over to the primary operating system (see col. 4, lines 1-9).

However, the prior art taken singly or in combination fail to teach, anticipate, suggest, or render obvious a first computer system, the debugger to operate from a firmware environment of the first computer system, the debugger executed by the first computer system independently of an operating system (OS) of the first computer system; initializing a communication channel of the first computer system to enable a second computer system to be communicatively coupled to the first computer system; communicatively coupling a second computer system to the first computer system at the communication channel; entering the debugger in response to a debug event; gathering machine state information about the first computer system with the debugger; and sending the machine state information to the second computer system from the first computer system. Consequently, claim 1 allowed over the prior art.

Claims **3-8, 10 and 12**, which is/are directly or indirectly dependent/s of claim 1 are also allowable over the prior art of record.

As per claim 13:

The prior art of record teach, Barnstijn et al. (hereinafter "Barnstijn") teaches or discloses a system and a method associated with the fields of application debugging or program debugging. (see col. 1, lines 10-15). Barnstijn teach a host system (a first computer) is connected to the target system or remote system (second system) via a communications link. A program is loaded onto the host computer that translates operating system calls into a number of communication signals that are transmitted over

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this then loaded onto the target system. The target operating system in turn sends an operating system signal to a debugging application in the target system. The debugging application in the target system then sends an operating system signal to the operating system. The operating system translates the operating system signal to an event signal and sends the event signal (debug event or command) over the communications link and the host system receives the event signal from the communications link and processes the event signal using a communication program resident on the host system, thereby translating the event signal into a host system operating system signal (the first computer system communicatively coupled to the second communication system). This operating system signal is transferred to the application under development in the host system. In this manner both input and output events are physically executed or initiated using the target system's hardware while one or more applications under development reside and are executed in the host computer development environment (see col. 2, lines 46-67 and col. 3, lines 1-28).

The prior of art, Lee in an analogous art teaches controlling a data processing system after startup, but before control is passed to the main operating system and in particular to use of an Open Firmware user interface as a debugging tool (see col. 1, lines 7-10). Further, Lee teaches that the combination of pre-loaded software into ROM is termed "firmware". Boot firmware controls the computer from startup until control is handed over to the primary operating system (see col. 4, lines 1-9).

However, the prior art taken singly or in combination fail to teach, anticipate, suggest, or render obvious an article of manufacture having a plurality of instructions

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stored thereon, the plurality of instructions to be executed independently of an operating system executed on the computer system, the instructions including: initializing a debugger in a first computer system during the pre-boot phase of the first computer system, the debugger to operate from a firmware environment of the first computer system; entering the debugger in response to a debug event from a second computer system communicatively coupled to the first computer system; gathering machine state information about the first computer system with the debugger; and sending the machine state information to the second computer system from the first computer system. Consequently, claim 13 allowed over the prior art.

Claims **14, 15 and 19**, which is/are directly or indirectly dependent/s of claim 13 are also allowable over the prior art of record.

As per claim 20:

The prior art of record teach, Barnstijn et al. (hereinafter "Barnstijn") teaches or discloses a system and a method associated with the fields of application debugging or program debugging. (see col. 1, lines 10-15). Barnstijn teach a host system (a first computer) is connected to the target system or remote system (second system) via a communications link. A program is loaded onto the host computer that translates operating system calls into a number of communication signals that are transmitted over this then loaded onto the target system. The target operating system in turn sends an operating system signal to a debugging application in the target system. The debugging application in the target system then sends an operating system signal to the operating system. The operating system translates the operating system signal to an event signal

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and sends the event signal (debug event or command) over the communications link and the host system receives the event signal from the communications link and processes the event signal using a communication program resident on the host system, thereby translating the event signal into a host system operating system signal (the first computer system communicatively coupled to the second communication system). This operating system signal is transferred to the application under development in the host system. In this manner both input and output events are physically executed or initiated using the target system's hardware while one or more applications under development reside and are executed in the host computer development environment (see col. 2, lines 46-67 and col. 3, lines 1-28).

The prior of art, Lee in an analogous art teaches controlling a data processing system after startup, but before control is passed to the main operating system and in particular to use of an Open Firmware user interface as a debugging tool (see col. 1, lines 7-10). Further, Lee teaches that the combination of pre-loaded software into ROM is termed "firmware". Boot firmware controls the computer from startup until control is handed over to the primary operating system (see col. 4, lines 1-9).

However, the prior art taken singly or in combination fail to teach, anticipate, suggest, or render obvious a processor; a communication channel operatively coupled to the processor, the communication channel to be coupled to a second computer system; and at least one flash memory device operatively coupled to the processor, the at least one flash memory device including firmware instructions to be executed independently of an operating system (OS) executed on the first computer system,

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which when executed by the processor perform operations comprising: initializing a debugger in the first computer system during the pre-boot phase of the first computer system, the debugger to operate from a firmware environment of the first computer system; initializing the communication channel; entering the debugger in response to a debug event; gathering machine state information about the first computer system with the debugger; and sending the machine state information to the second computer system from the first computer system. Consequently, claim 20 allowed over the prior art.

Claims 21-25, 27 and 28, which is/are directly or indirectly dependent/s of claim 20 are also allowable over the prior art of record.

As per claim 29:

The prior art of record teach, Barnstijn et al. (hereinafter "Barnstijn") teaches or discloses a system and a method associated with the fields of application debugging or program debugging. (see col. 1, lines 10-15). Barnstijn teach a host system (a first computer) is connected to the target system or remote system (second system) via a communications link. A program is loaded onto the host computer that translates operating system calls into a number of communication signals that are transmitted over this then loaded onto the target system. The target operating system in turn sends an operating system signal to a debugging application in the target system. The debugging application in the target system then sends an operating system signal to the operating system. The operating system translates the operating system signal to an event signal and sends the event signal (debug event or command) over the communications link

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and the host system receives the event signal from the communications link and processes the event signal using a communication program resident on the host system, thereby translating the event signal into a host system operating system signal (the first computer system communicatively coupled to the second communication system). This operating system signal is transferred to the application under development in the host system. In this manner both input and output events are physically executed or initiated using the target system's hardware while one or more applications under development reside and are executed in the host computer development environment (see col. 2, lines 46-67 and col. 3, lines 1-28).

The prior of art, Lee in an analogous art teaches controlling a data processing system after startup, but before control is passed to the main operating system and in particular to use of an Open Firmware user interface as a debugging tool (see col. 1, lines 7-10). Further, Lee teaches that the combination of pre-loaded software into ROM is termed "firmware". Boot firmware controls the computer from startup until control is handed over to the primary operating system (see col. 4, lines 1-9).

However, the prior art taken singly or in combination fail to teach, anticipate, suggest, or render obvious a method for initializing a debugger in a first computer system during the pre-boot phase of the first computer system, the debugger to operate from a firmware environment of the first computer system, the debugger executed by the first computer system independently of an operating system of the first computer system; initializing a communication channel of the first computer system to enable a second computer system to be communicatively coupled to the first computer system;

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communicatively coupling a second computer system to the first computer system at the communication channel; entering the debugger in response to a debug command from the second computer system at the first computer system; setting a watchdog timer at the first computer system to periodically check for another debug command at the communication channel; and examining the first computer system with the debugger. Consequently, claim 29 allowed over the prior art.

Claims **30 and 31**, which is/are directly or indirectly dependent/s of claim 29 are also allowable over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Esaw Abraham whose telephone number is (571) 272-3812. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are successful, the examiner's supervisor, Jacques Louis-Jacques can be reached on (571) 272-6962. The fax phone numbers for the organization where this application or proceeding is assigned (571) 273-8300.

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Information regarding the status of an Application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or PUBLIC PAIR. Status information for unpublished applications is available through Private Pair only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Esaw Abraham

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 GUY LAMARRE
PRIMARY EXAMINER